IOP Conference Series: Materials Science and Engineering 2016 vol.158 N1

Development of film- and- fabric composite materials durability assessing methodology under time-dependent influences of temperature and solar radiation

Kayumov R., Muhamedova I., Suleymanov A., Tazyukov B.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© Published under licence by IOP Publishing Ltd.In this paper, we present the design of stress-strain state calculation and film-and- fabric composite materials durability under stresses and solar radiation. We have constructed a two-dimensional finite-state-element computer model of the deforming process of the low- level cell of film-and-fabric-based composite material for the evaluation of its durability which takes into account non-linear viscoelasticity, temperature variations, ageing of the material, the process of upbuilding of microdamage and photodegradation. Qualitative research of operational factors influence (UV, temperature) on film-and-fabric composite materials durability was conducted.

http://dx.doi.org/10.1088/1757-899X/158/1/012050